

13. (Once Amended) The system of claim 12 in which the self-assembling monolayer comprises a silane, a thiol, isocyanide, polyelectrolyte or combinations thereof.

14. (Once Amended) The system of claim 1 in which the instructions comprises data processing instructions capable of receiving input data comprising data on the changes in the temporal description of the action potential.

16. (Once Amended) The system of claim 15 in which the cell anchorage molecules comprise antibodies, antigens, receptor ligands, receptors, lectins, carbohydrates, enzymes, enzyme inhibitors, biotin, avidin, streptavidin, RGD-type peptides, integrins, cadherins, modified lipids, or combinations thereof.

21. (Once Amended) The system of claim 20 in which the polymer comprises cellulose, methylcellulose, or dextran.

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22. (Once Amended) The system of claim 1 in which the intervening layer comprises an attractive layer.

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24. (Once Amended) A method of determining one or more ion channels that are affected by a test substance comprising:

(a) contacting a substance to be tested with a device comprising a solid state microelectrode; a cell culture including one or more cells having a cell membrane including one or more ion channels, which one or more cells are capable of providing a measurable action potential that exhibits one or more perceptible characteristics; and an intervening layer that is acting as a high impedance seal and which is positioned between said microelectrode and said cell culture;